

REMARKS

Regarding the novelty rejection of claim 17 based on U.S. 5,926,476 (Ghaibeh), it is to be noted that the claim specifically recites that the slots of a defined slot length that are assigned for terminal equipment are further divided into mini slots. This is not shown by Ghaibeh. As is pointed out in response to the last Action, the Examiner is referred to Fig. 4 of the present disclosure which shows a known slot 112 in the top half of the drawing while the inventive mini slot 118 is shown in the lower half of the drawing. The known slot has a defined slot length as shown in the known burst 113. The known slots are further divided into mini slots 118, use of which is controlled by the indications transmitted downstream. Again, this is not shown or even suggested by Ghaibeh.

Furthermore, the Examiner is not correct to state that mini slots in Ghaibeh are used for the transmission of reservation messages which the terminal equipment use for informing a central configuration that the terminal equipment wish to reserve data transmission capacity. If the Examiner will look at Fig. 12 of Ghaibeh which is a block diagram of an upstream data frame transmitted in response to a reservation mode permit 200, it will be noted that the non-contention request slot 202 is used as a header 206, 207 at the head of an ATM cell 62 *having a full 53 byte payload* and 6 bytes of FEC. Thus, the upstream data frame 58 of Fig. 12 is just like the upstream data frame 58 of Fig. 2 of Ghaibeh and nowhere is there shown any slot in the upstream data frame 58 being divided into mini slots, much less being used for transmission of reservation messages.

It should also be pointed out that although Fig. 14 shows a plurality of upstream “mini request slots” 222 within the 68 byte polling slot 58, the Ghaibeh reference still fails to show the slots used for data transmission capacity being divided into mini slots, the use of which is controlled by the indications transmitted downstream. It should also be mentioned that the description of Fig. 14 contained in the Ghaibeh reference was added by the continuation-in-part application filed

December 19, 1996 which is after the priority date of the present application. Therefore, this material is not available for purposes of a 102(e) rejection. Although Fig. 13 of the original Ghaibeh (now U.S. 5,956,338) contains a Fig. 13 that is somewhat similar to Fig. 14 of U.S. 5,926,476, a review of the text of U.S. 5,956,338 at column 10, lines 42-53 does not reveal any mention of "mini slots" or the division of a defined slot length into mini slots for purposes of distributing the use of data transmission capacity to the equipment. A similar remark could be made about Fig. 15, even though it does not have anything to do with reservation messages since it is concerned with group contention.

Fundamentally, the present invention has the insight that the defined slot length of the "state-of-the-art" is not very well suited to delay-critical services (see page 6, lines 14-25 (corresponding to column 5, lines 9-24 of U.S. 6,091,440)), and the solution is to divide the defined slot lengths into mini slots 118 such as shown in Fig. 4 of the present disclosure so that the so-divided mini slots can be formed into shorter bursts such as the burst 119 shown in Fig. 4, thereby alleviating the delay problem mentioned above under which the old system suffers. Claim 17 captures this innovation when it recites that the slots of a defined slot length are assigned for terminal equipment in order to distribute the use of data transmission capacity to the equipment, and the use of the slots in the cable TV system are controlled by use indications transmitted downstream, which slots are further divided into mini slots, the use of which is controlled by the use indications transmitted downstream. The further insight of the present invention (as expressed in claim 17) is that the so-divided mini slots can also be used for the transmission of reservation messages. The only thing shown by Ghaibeh is a plurality of upstream mini requests slots 222 in a 68 byte polling slot 58 but fails to show any data transmission capacity slot with a defined slot length divided into mini slots. As also mentioned above, Ghaibeh (U.S. 5,926,476) is not available as a 102(e) reference because the parts thereof relied on

by the Examiner have been added after the present applicant's §119(a) foreign priority date of November 29, 1996, i.e., about three weeks later.

Withdrawal of the 35 U.S.C. §102(e) rejection of claim 17 is requested.

Regarding the obviousness rejection of claim 10 as being unpatentable over Ghaibeh in view of Kolze et al. (U.S. 6,285,681), it is noted that neither Ghaibeh nor Kolze et al. say anything about the prior art upstream channel shown in Fig. 3 of the present disclosure. As explained in the present specification, the distribution of transmission in a known upstream channel permits a data terminal equipment to which a certain slot of an upstream channel has been assigned, to transmit a burst of 64 bytes during a certain slot. A burst 113 is shown in Fig. 3. At the beginning of the burst there is a synchronization period 114 of 4 bytes followed by a payload 115 of 53 bytes, which is most commonly an ATM cell, followed by a 6-byte Reed-Solomon code 116 calculated from the contents. At the end of the burst there is a guard period 117 of 1 byte.

As explained previously, when trying to apply the state-of-the-art arrangement for arranging a 2-way data transmission in a cable Television system to carry out delay-critical services, one is confronted with certain problems. One of these is the use of ATM cells with a payload of 48 bytes (384 bits) used for delay-critical services. As mentioned in the specification, filling an ATM cell at the rate of 64 kbps takes six milliseconds. The terminal equipment of the prior art does not transmit the ATM cell upstream to the central equipment before it is full, so that merely filling the ATM cell causes a delay of six milliseconds to the signal. Such a delay is unacceptable for certain delay-critical services such a telephony where the delay should be less than 3.4 milliseconds. Neither of the references cited by the Examiner mention or even hint at this problem or its solution as claimed in claim 10.

As pointed out previously in connection with the novelty rejection of claim 17, the Ghaibeh reference is not only unavailable as a 102(e) foundation for this obviousness rejection because of its filing date, but also fails to show a defined slot length assigned for terminal equipment to distribute the use of data transmission capacity divided into mini slots. Even if Ghaibeh were available as a §102(e) reference, the fact that Ghaibeh discloses a plurality of upstream mini requests slots 222 within a 68 byte polling slot 58 does not mean that Ghaibeh shows the slots of a defined slot length that are assigned to distribute the use of data transmission capacity further divided into mini slots, wherein the length of three mini slots plus a guard byte is the same as the defined slot length.

The claimed arrangement of three mini slots plus a guard byte being the same as the defined slot length conveniently allows the problem recognized by the present inventor to be solved in a way that enables a trade-off to be made between throughput (efficiency), error rate performance (physical layer robustness) and latency.

It would take more than the disclosure of Kolze et al. with its teaching that longer bursts or slots are more bandwidth efficient but, on the other hand, that longer code words in a burst may result in a less robust signal to arrive at the presently claimed invention which is remarkably fitted to the existing state-of-the-art protocol architecture without causing any appreciable disruptions in either the central equipment or the terminal equipment.

Reconsideration and withdrawal of the obviousness objection of claim 10 is requested.

The double patenting rejection is noted and applicant is still willing to submit a terminal disclaimer upon allowance of claim 10 in its present form with the issue fee.

New claims 18 and 19 are added to claim the central configuration and the terminal of Fig. 7.

The objections and rejections of the Office Action of May 21, 2004, having been obviated by amendment or shown to be inapplicable, withdrawal thereof is requested and passage of claims 10, 17, 18 and 19 to issue is solicited.

Respectfully submitted,


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